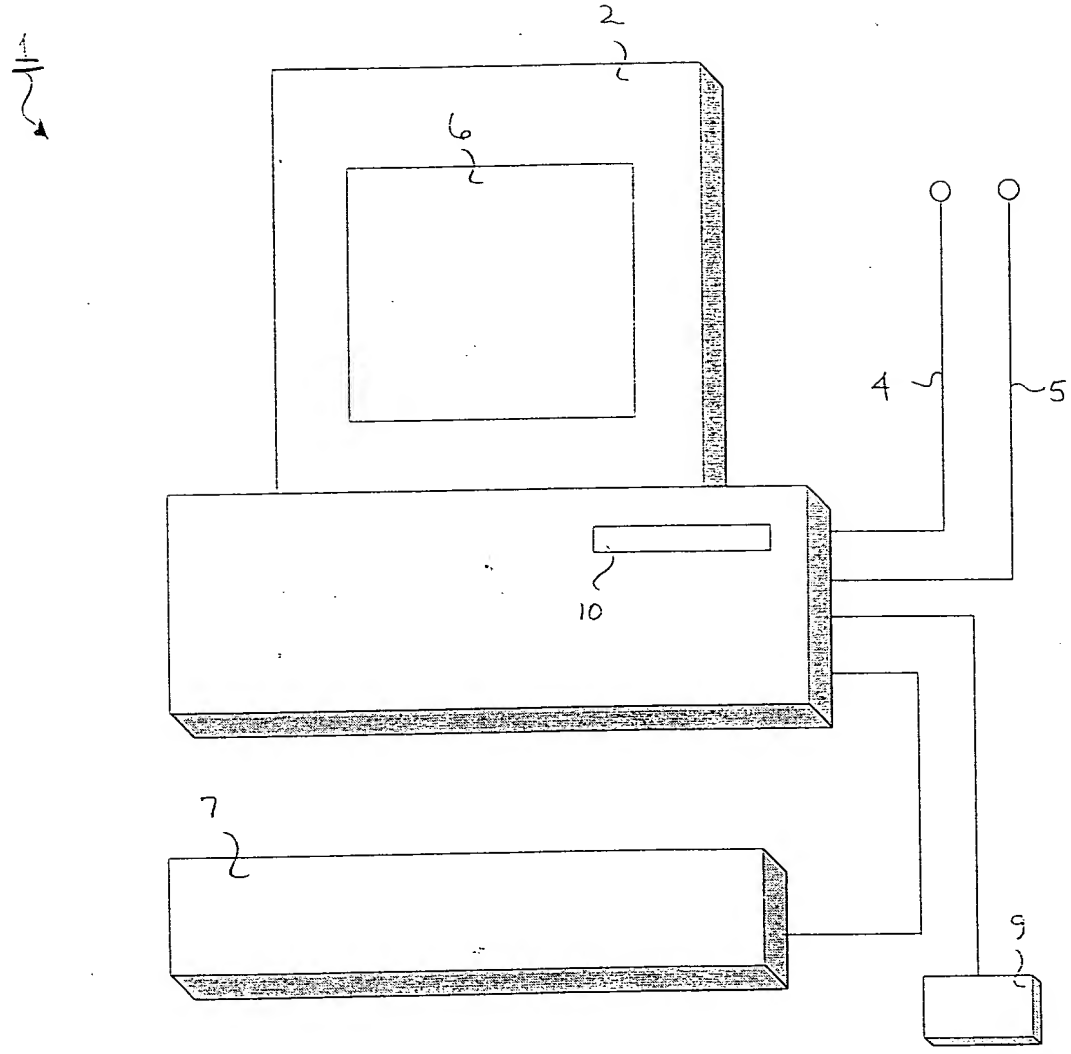

FIG. 1

09/25/2003, EAST Version: 1.03.0002

6,810,260 B2

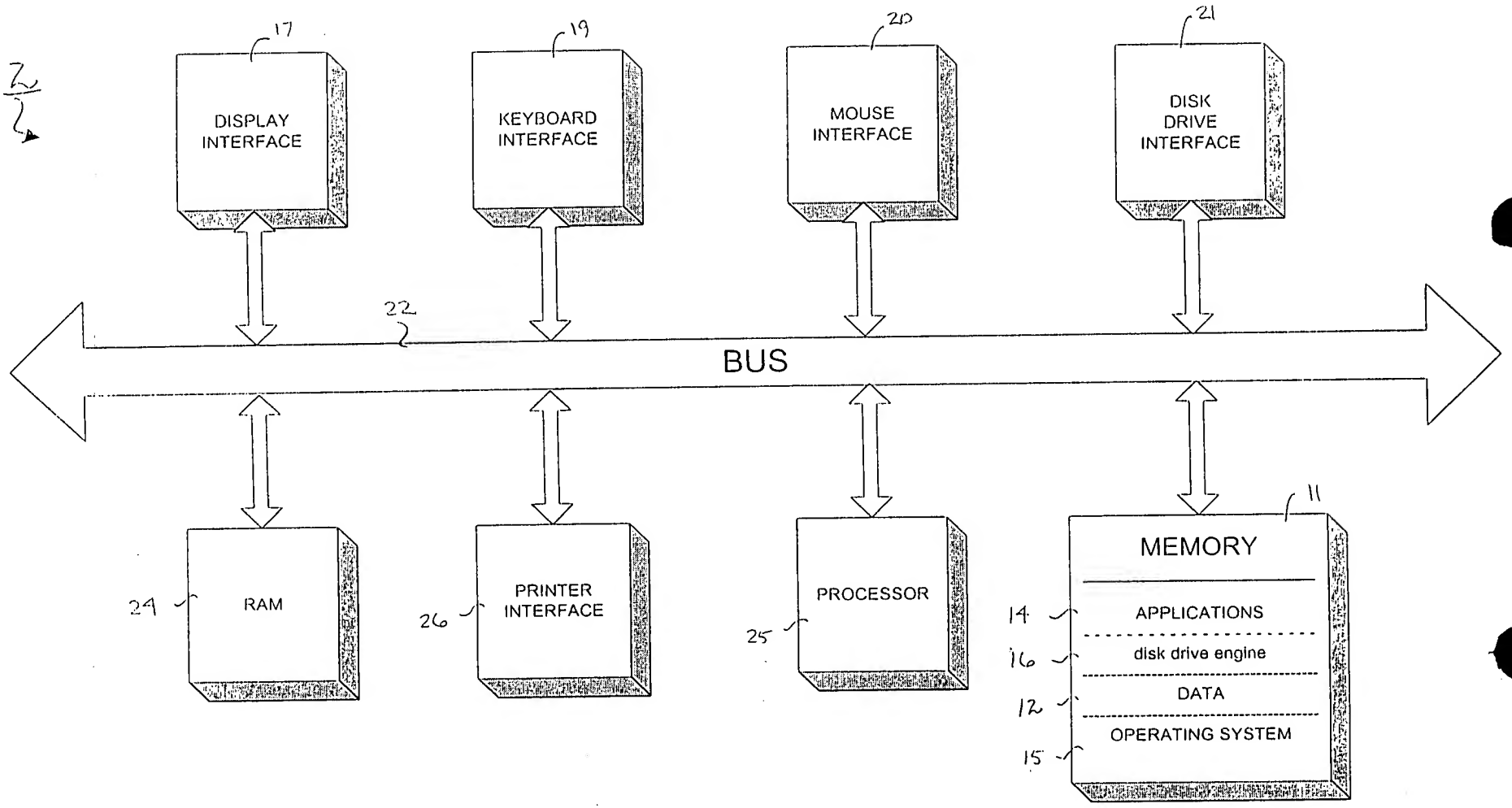

FIG. 2

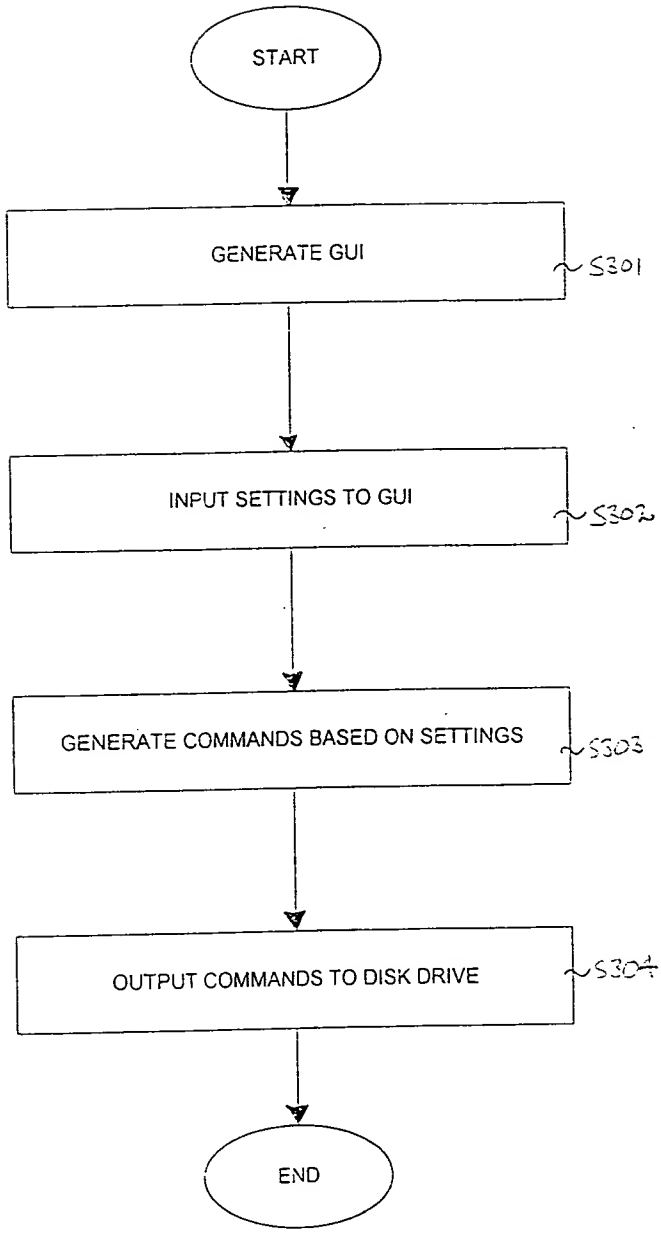
START
GENERATE GUI
S301
INPUT SETTINGS TO GUI
S302
GENERATE COMMANDS BASED ON SETTINGS
S303
OUTPUT COMMANDS TO DISK DRIVE
S304
END

FIG. 3

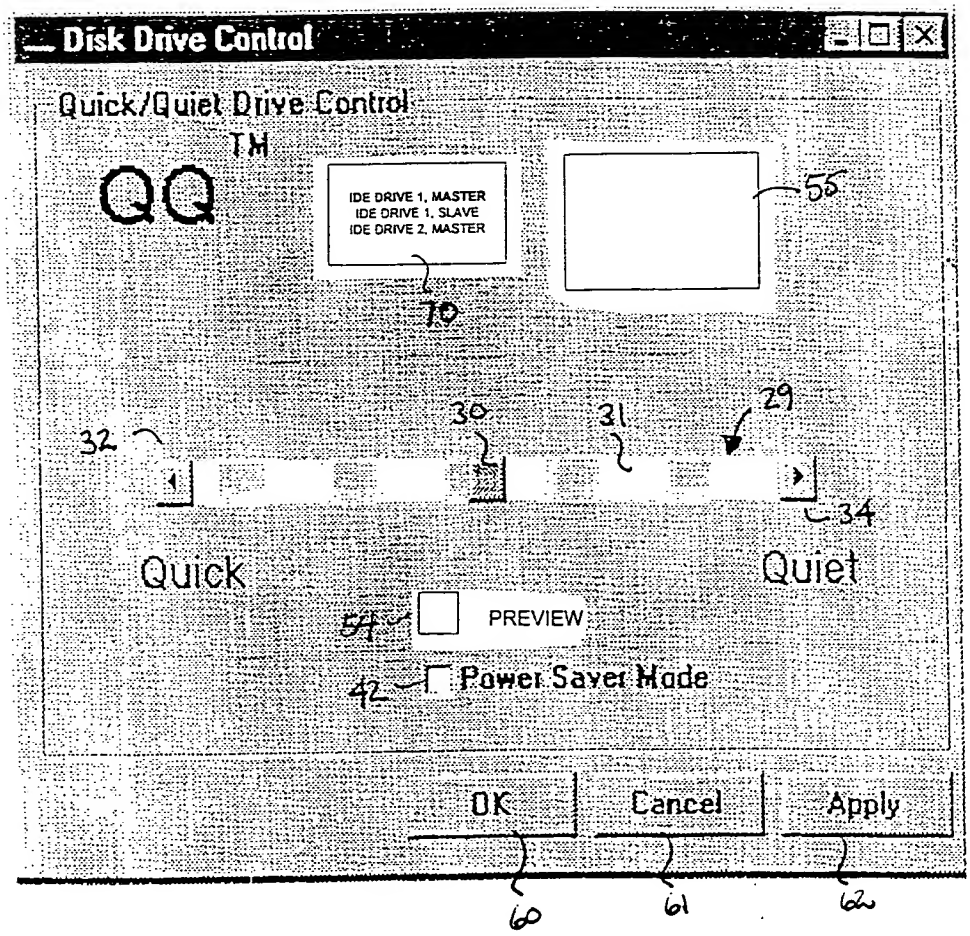
27
Disk Drive Control
Quick/Quiet Drive Control
TM
QQ
IDE DRIVE 1, MASTER
IDE DRIVE 1, SLAVE
IDE DRIVE 2, MASTER
70
55
32
30
31
29
34
Quick
Quiet
54
PREVIEW
42
Power Saver Mode
OK
Cancel
Apply
60
61
62

FIG. 4

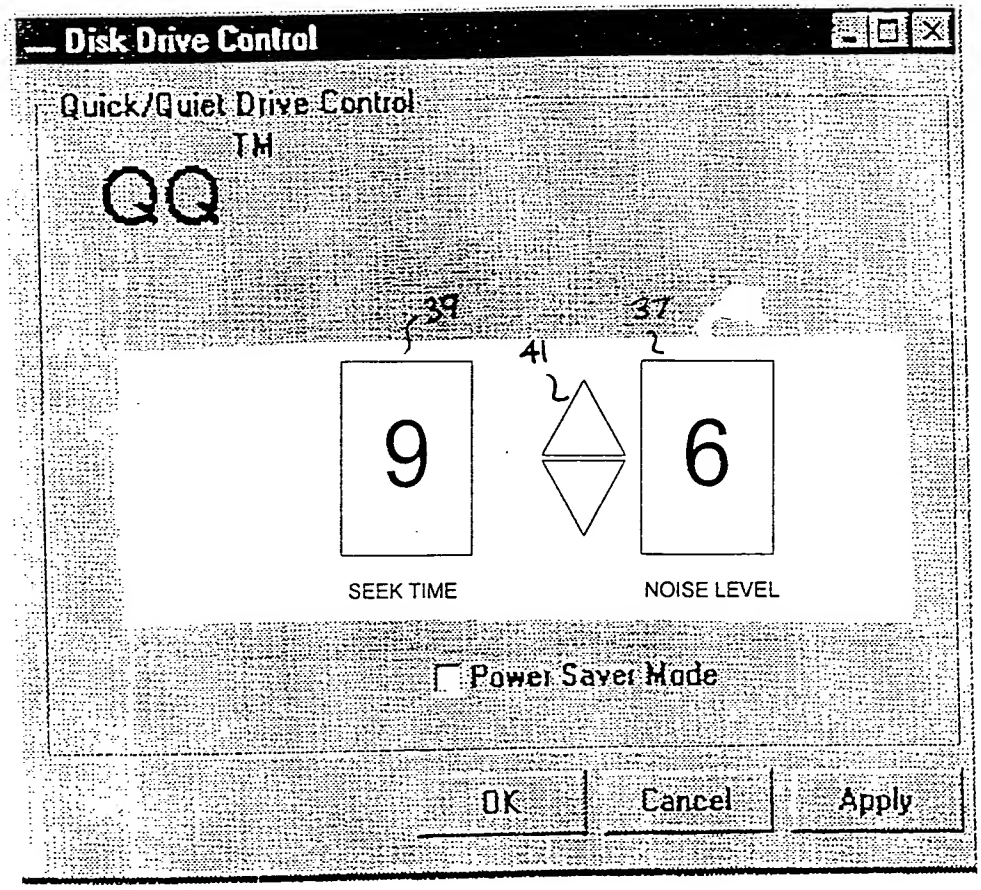
Disk Drive Control
Quick/Quiet Drive Control
TM
QQ
39
37
41
9
6
SEEK TIME
NOISE LEVEL
Power Saver Mode
OK
Cancel
Apply

FIG. 5

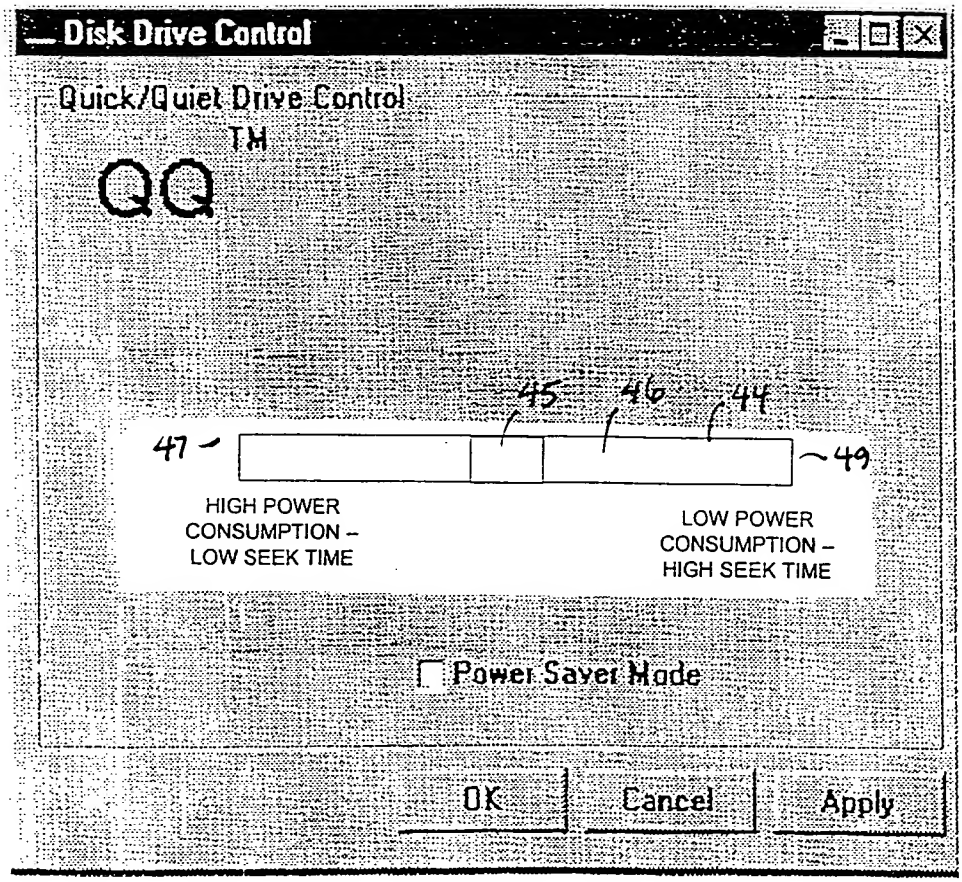
Disk Drive Control
Quick/Quiet Drive Control
TM
QQ
45
46
44
47
49
HIGH POWER
CONSUMPTION –
LOW SEEK TIME
LOW POWER
CONSUMPTION –
HIGH SEEK TIME
Power Saver Mode
OK
Cancel
Apply

FIG. 6

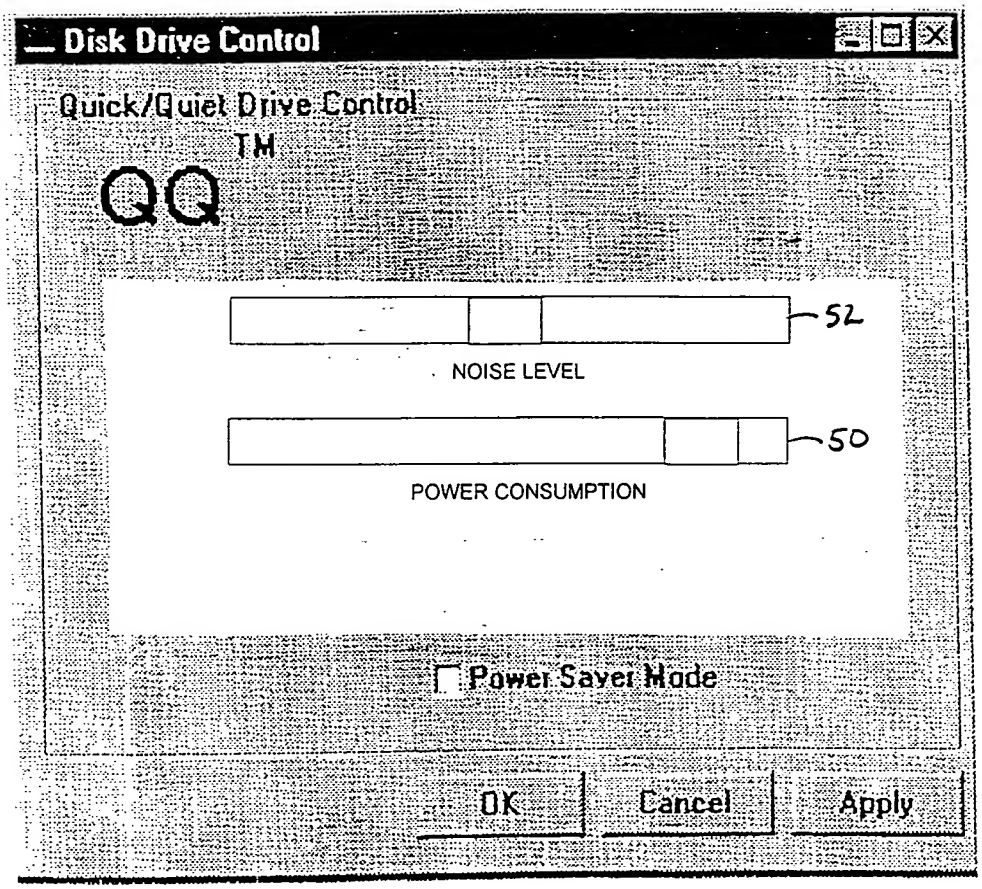
Disk Drive Control
Quick/Quiet Drive Control
TM
QQ
52
NOISE LEVEL
50
POWER CONSUMPTION
Power Saver Mode
OK
Cancel
Apply

FIG. 7

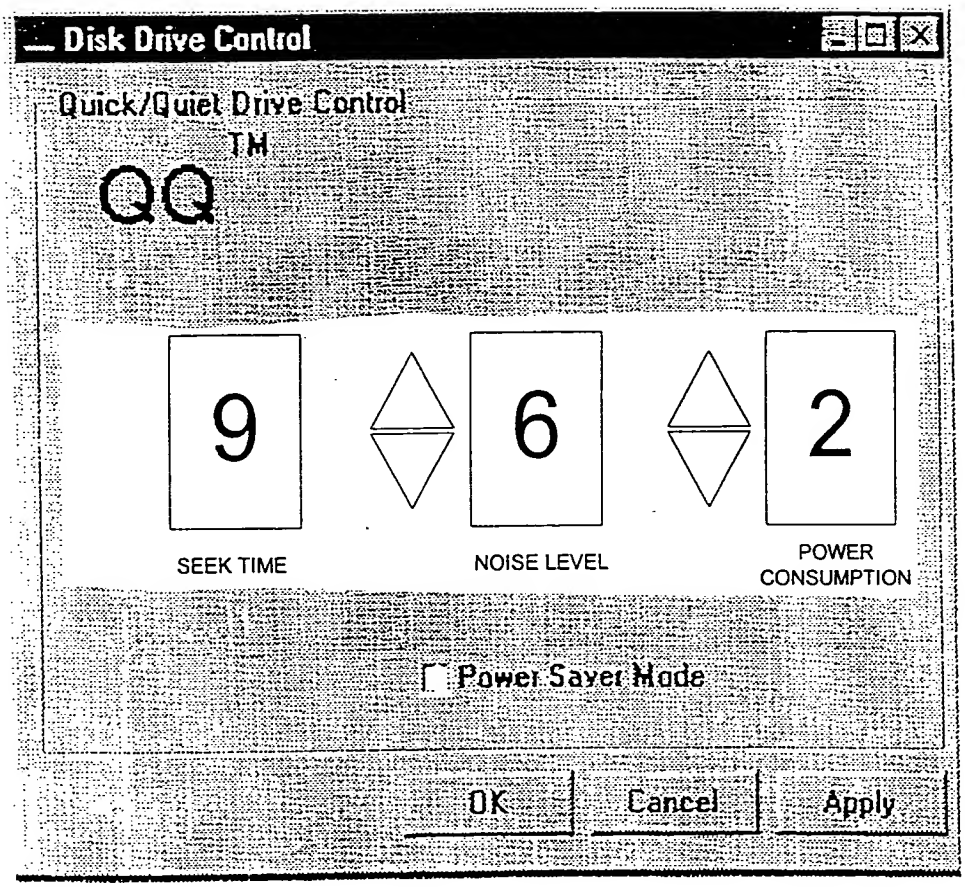

FIG. 8

09052784 - 090499

09202984 - 090496

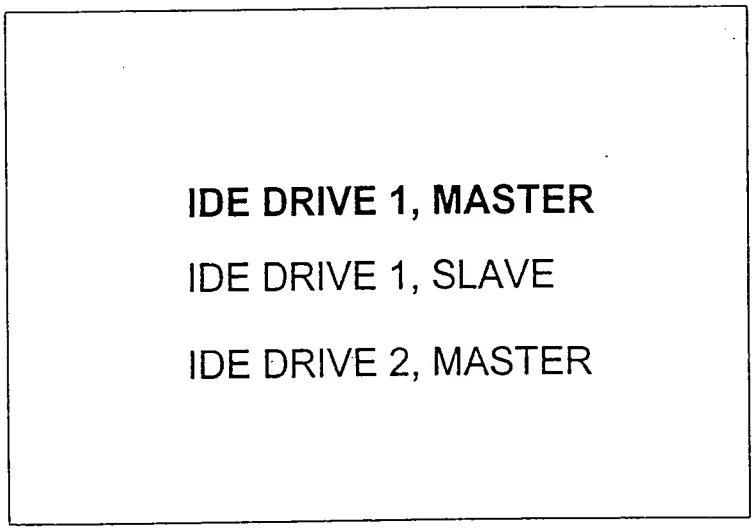

FIG. 9

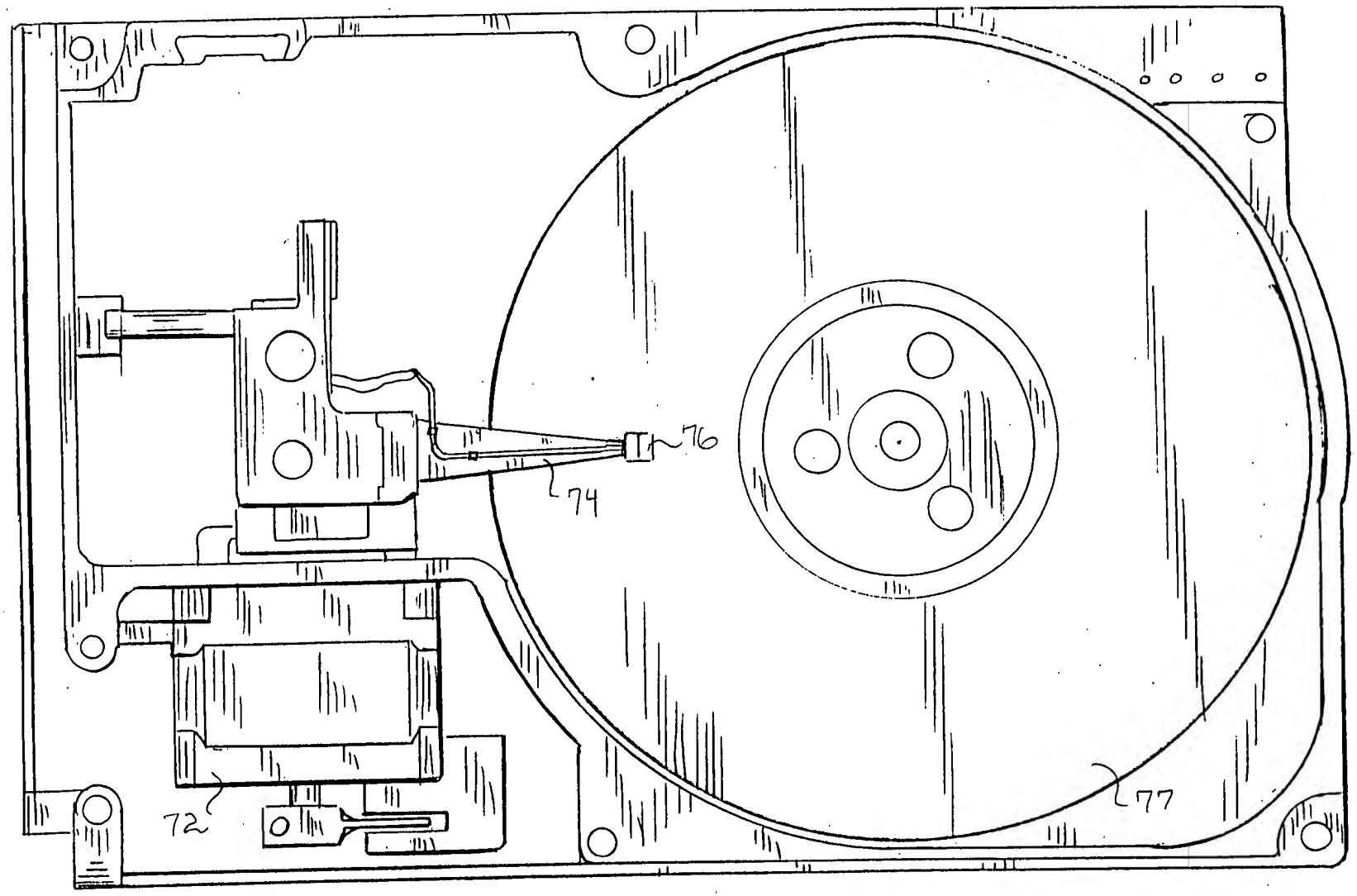

FIG. 10A

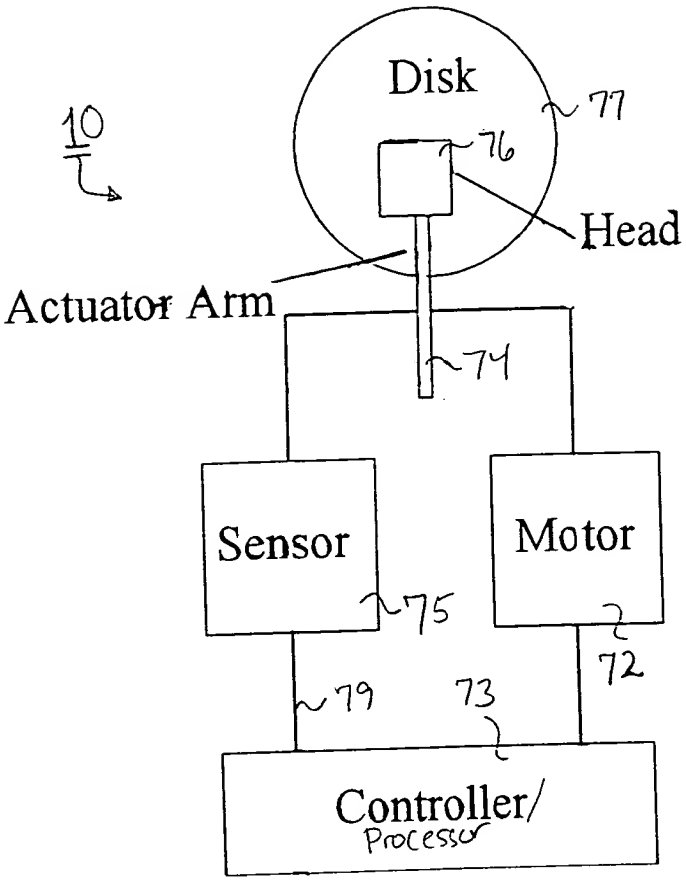
10
Disk
77
76
Head
Actuator Arm
74
Sensor
Motor
75
72
79
73
Controller/
Processor

FIG. 10B

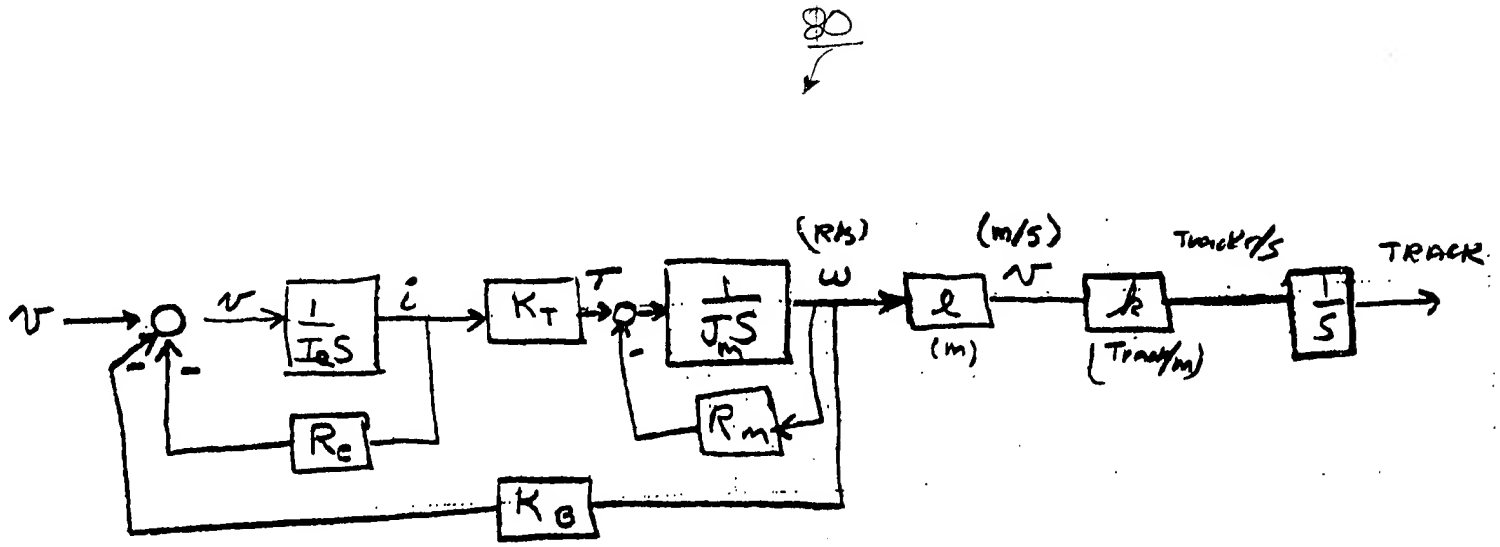
80
v
v
$\frac{1}{I_a S}$
i
K_T
T
$\frac{1}{J_m S}$
(RAD)
ω
ℓ
(m)
(m/s)
v
k
(Track/m)
Tracks/s
$\frac{1}{S}$
TRACK
R_e
R_m
K_B

FIG. 11

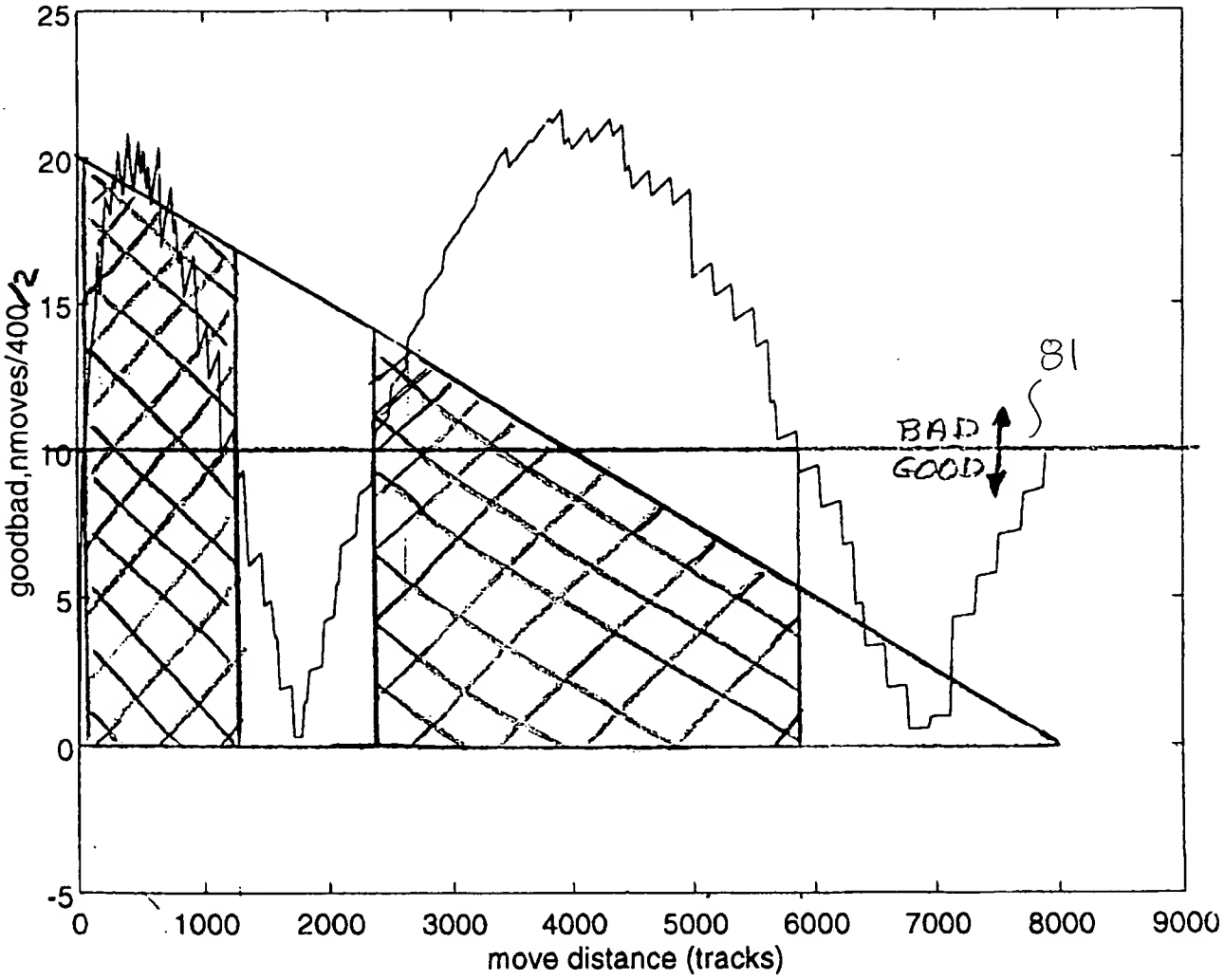
25
20
15
10
5
0
-5
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
goodbad,nmoves/400
move distance (tracks)
81
BAD
GOOD

FIG. 12

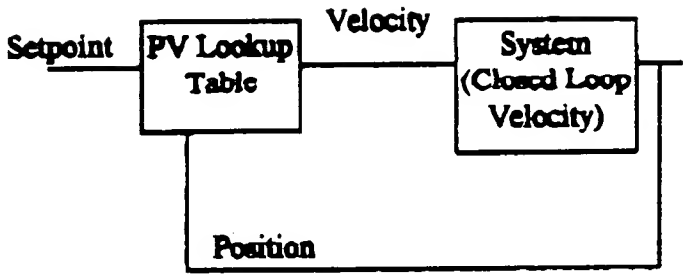

FIG. 13
(PRIOR ART)

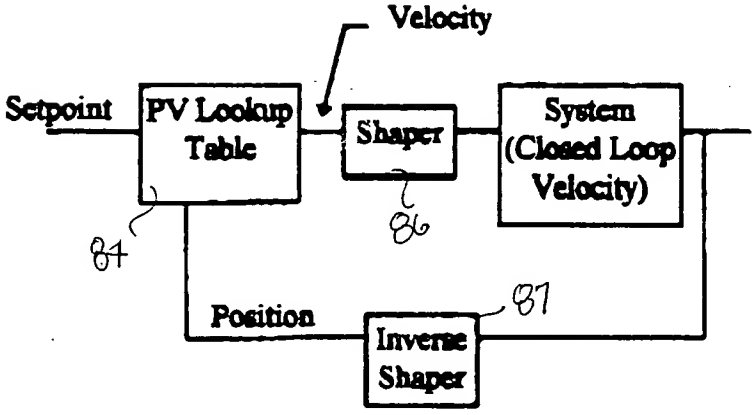

FIG. 14

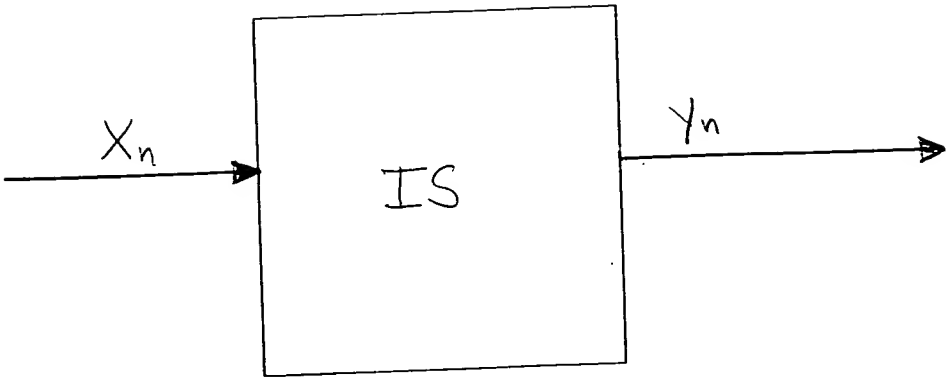

FIG. 15

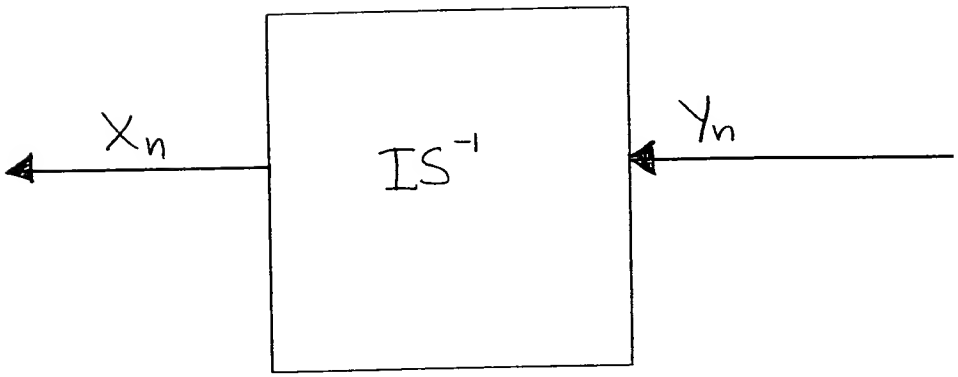

FIG. 16

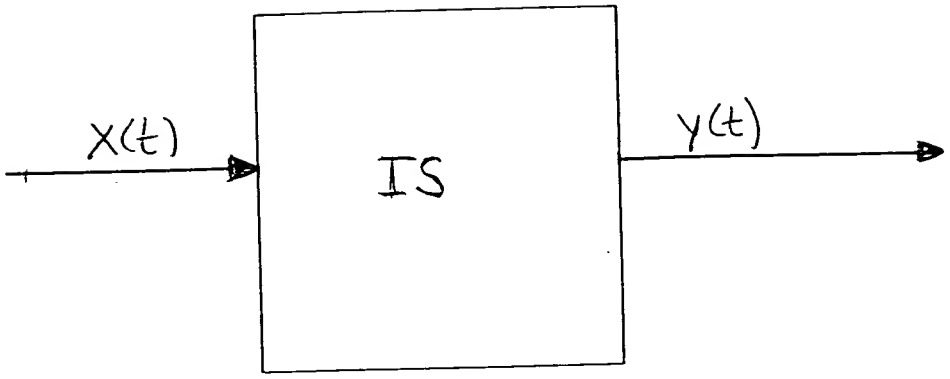

FIG. 17

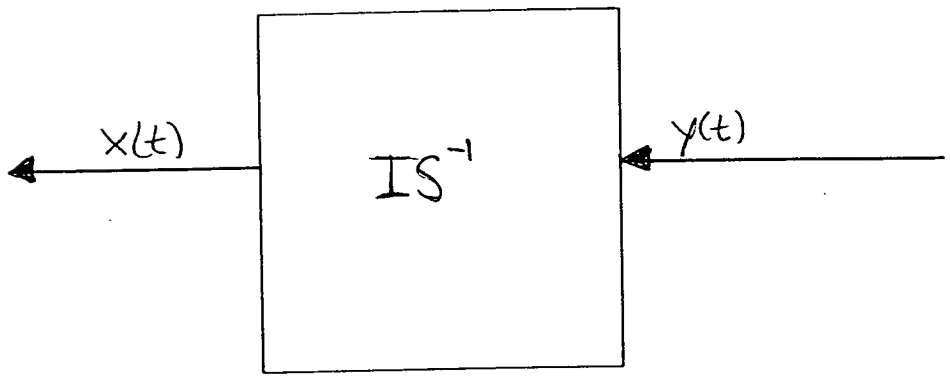

FIG. 18

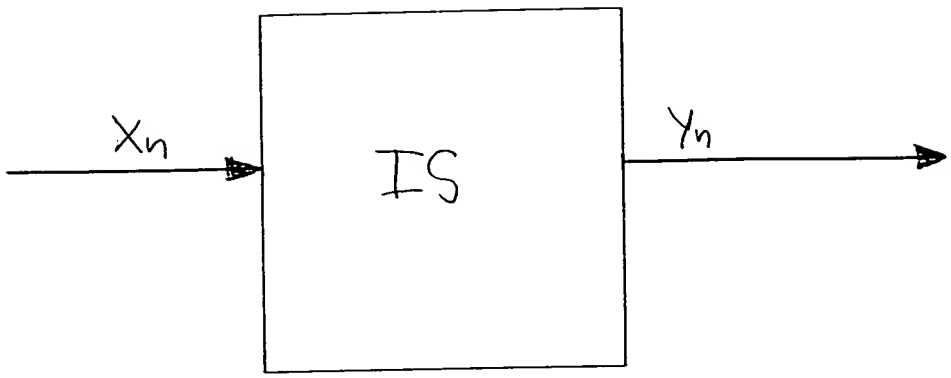

FIG. 19

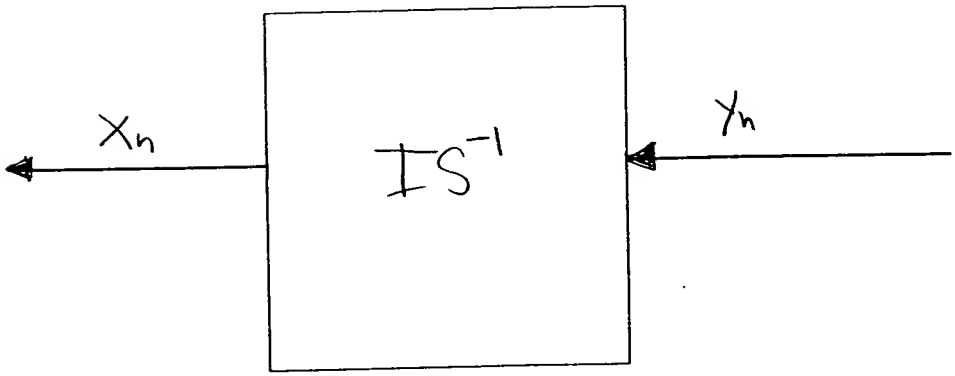

FIG. 20

Adobe PageMaker 6.0

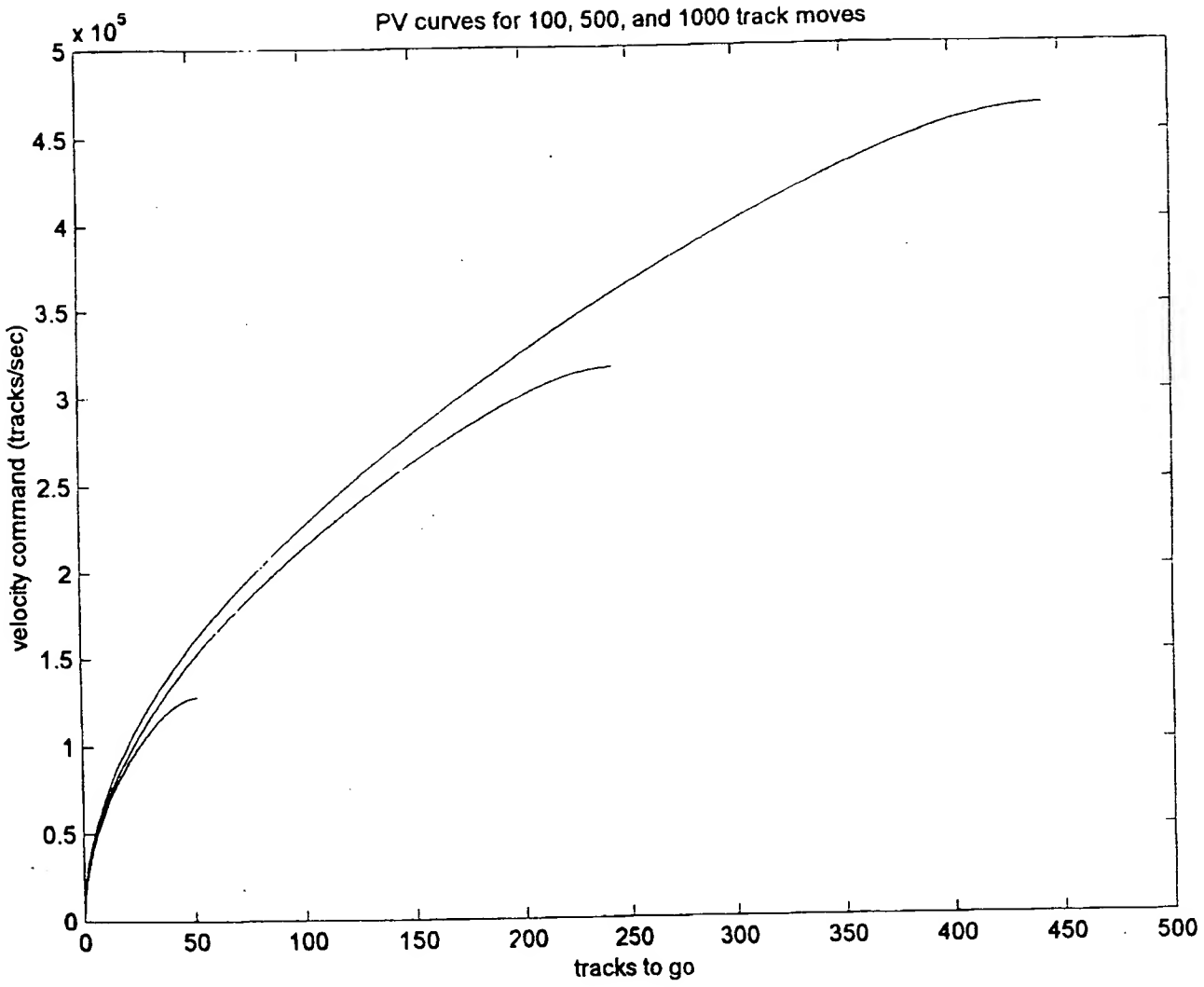

FIG. 21

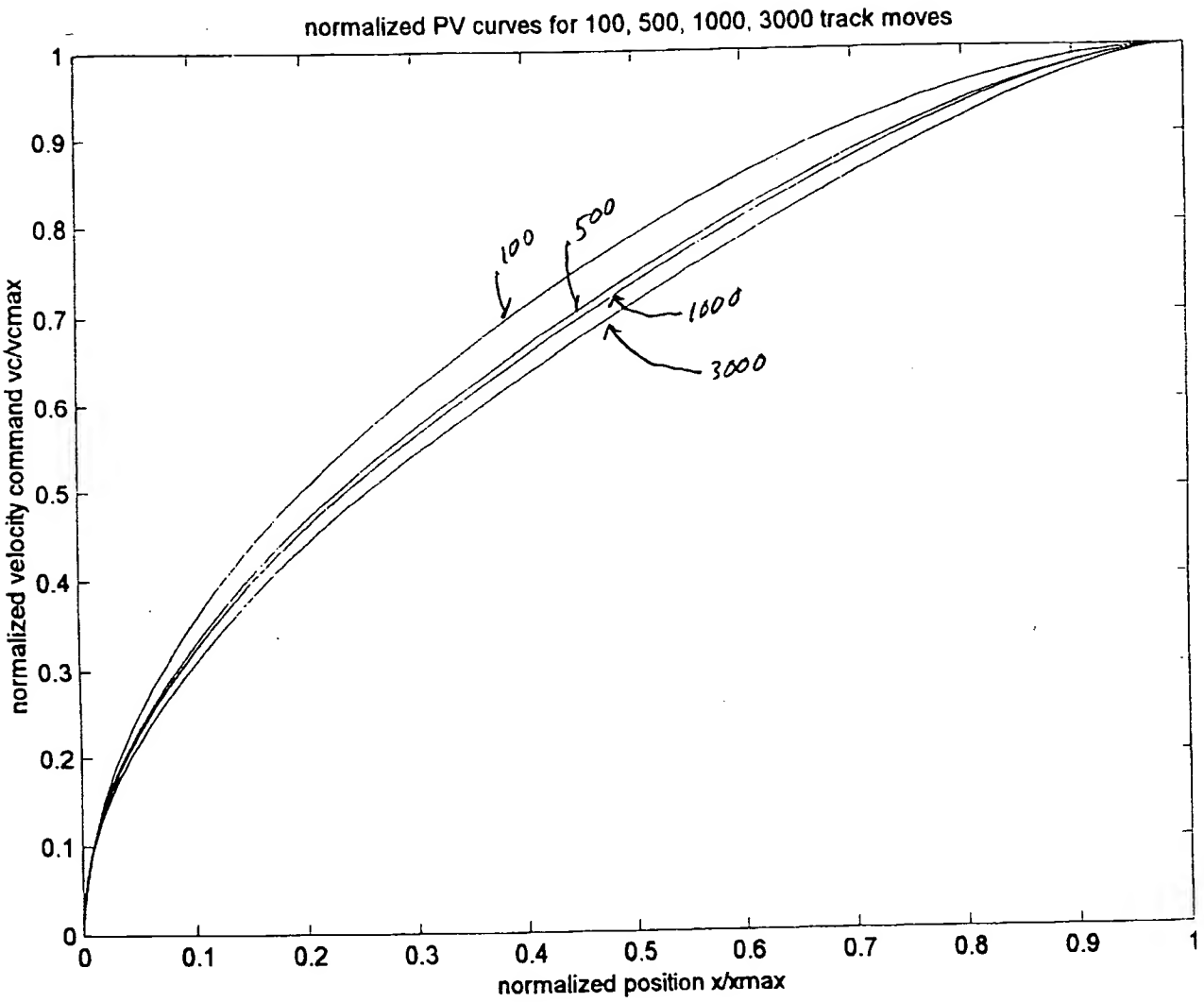
normalized PV curves for 100, 500, 1000, 3000 track moves
normalized velocity command vc/vcmax
normalized position x/xmax
100
500
1000
3000
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1

FIG. 22

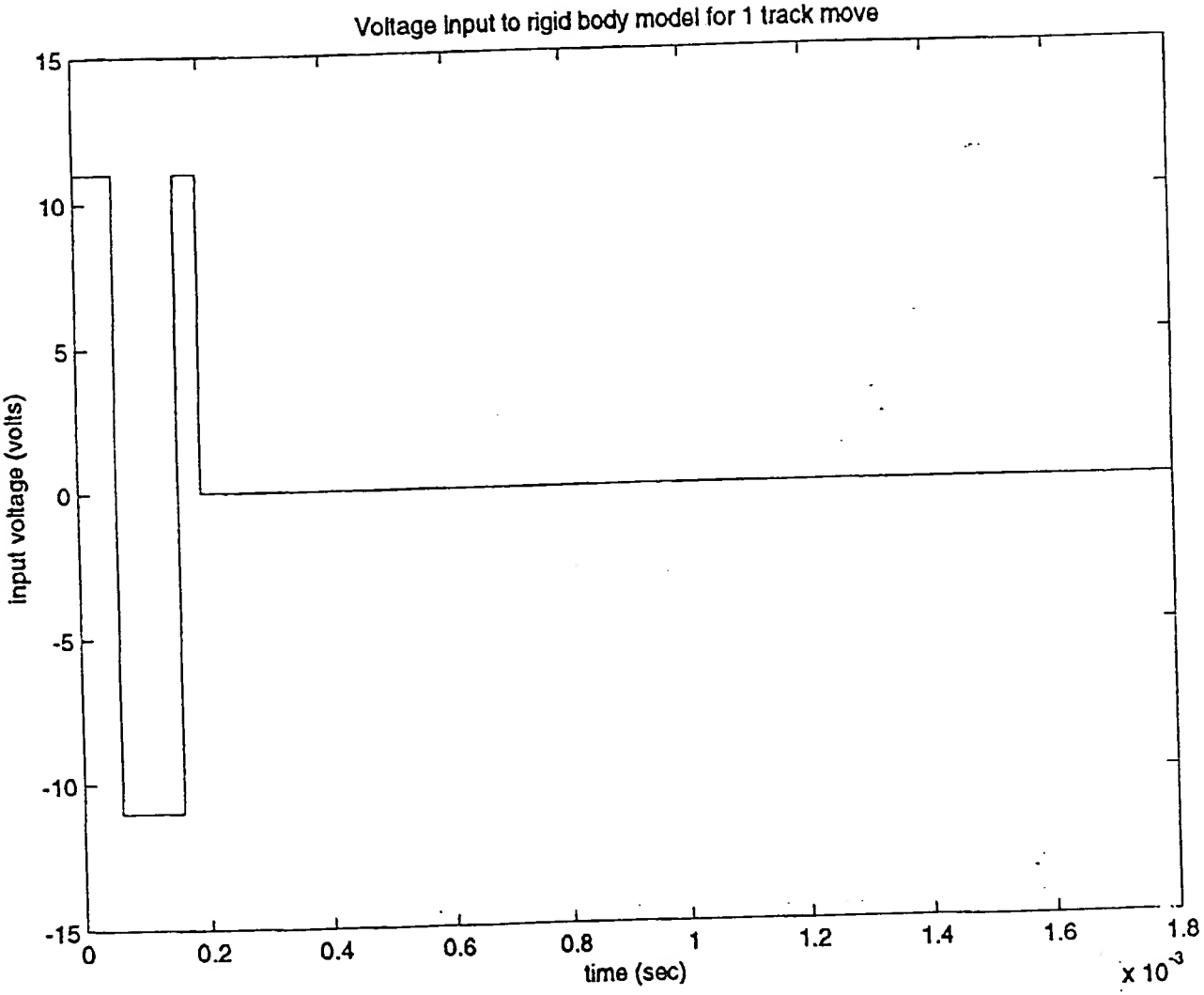
Voltage input to rigid body model for 1 track move
input voltage (volts)
time (sec)
x 10^-3
15
10
5
0
-5
-10
-15
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8

FIG. 23A

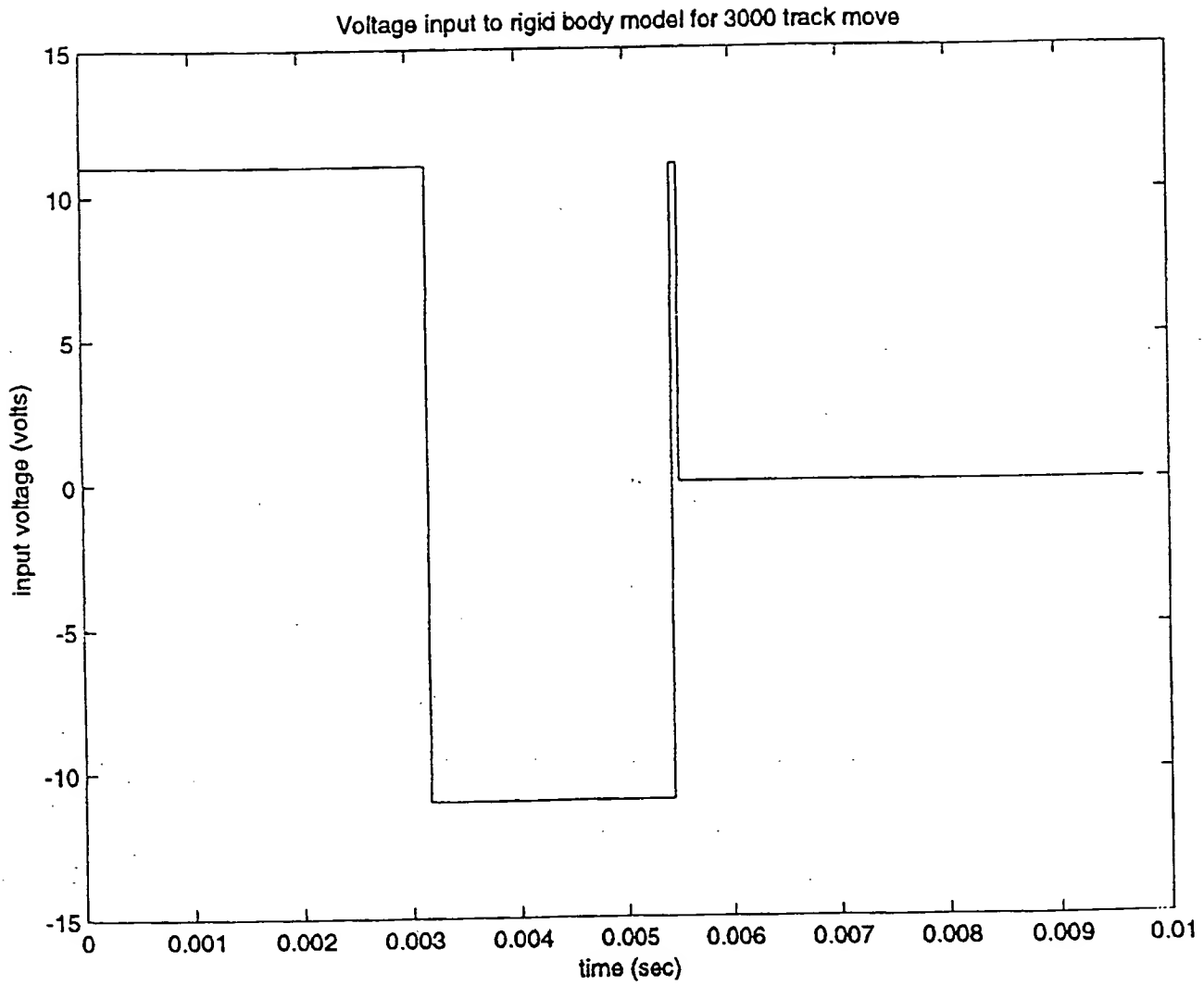
Voltage input to rigid body model for 3000 track move
input voltage (volts)
time (sec)
15
10
5
0
-5
-10
-15
0
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0.008
0.009
0.01

FIG. 23B

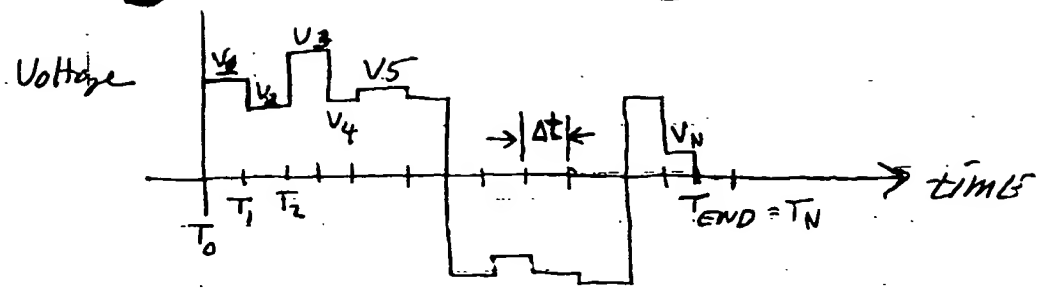

FIG. 24

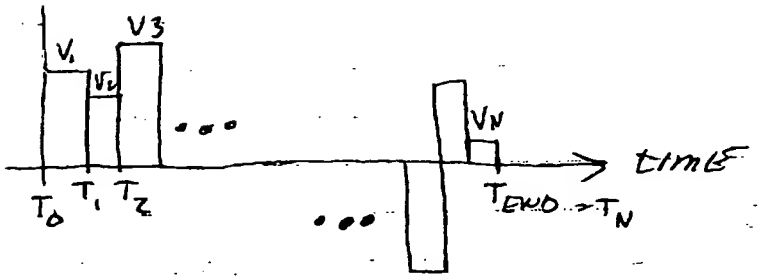

FIG. 25

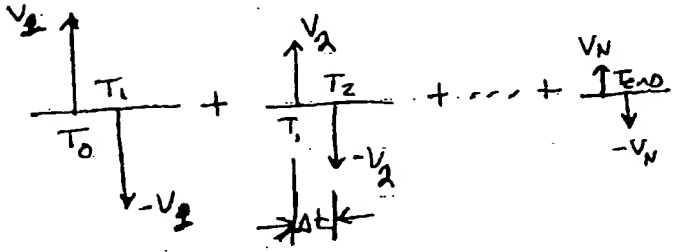

FIG. 26

09525284 - 030405

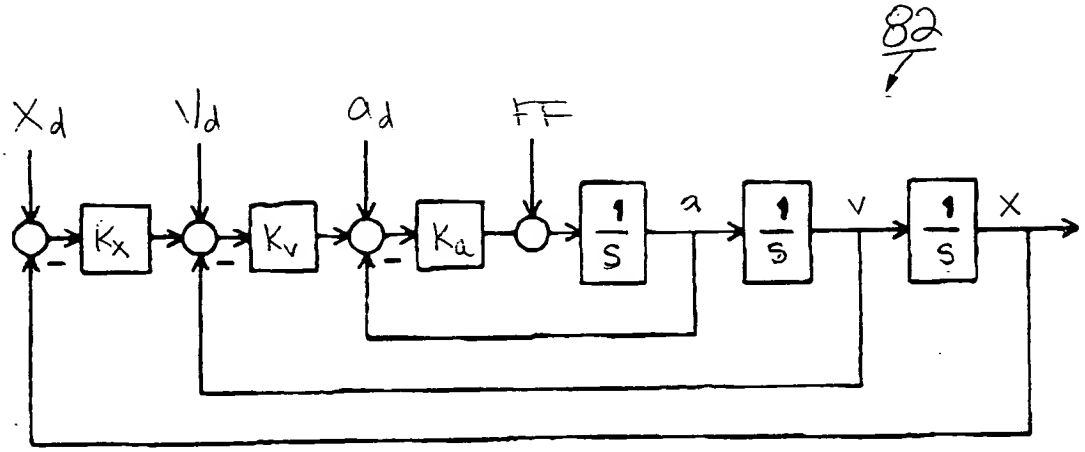
82
Xd
Vd
ad
FF
Kx
Kv
Ka
1/S
a
1/S
v
1/S
X

FIG. 27

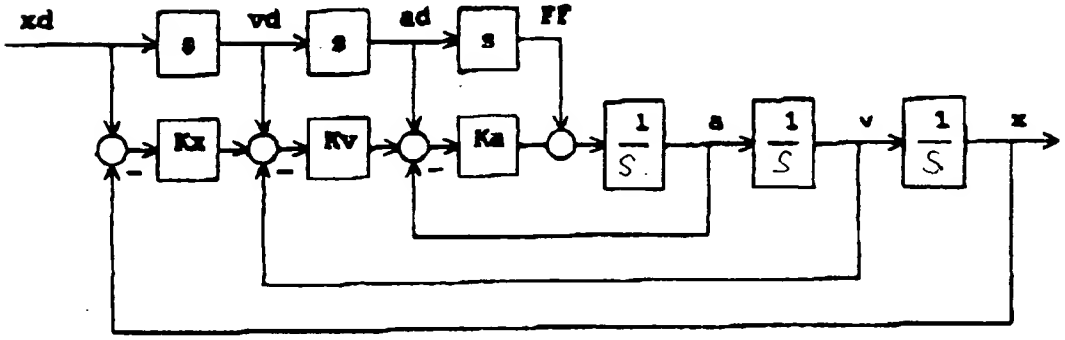
xd
vd
ad
FF
s
s
s
Kx
Kv
Ka
1/S
a
1/S
v
1/S
x

FIG. 28

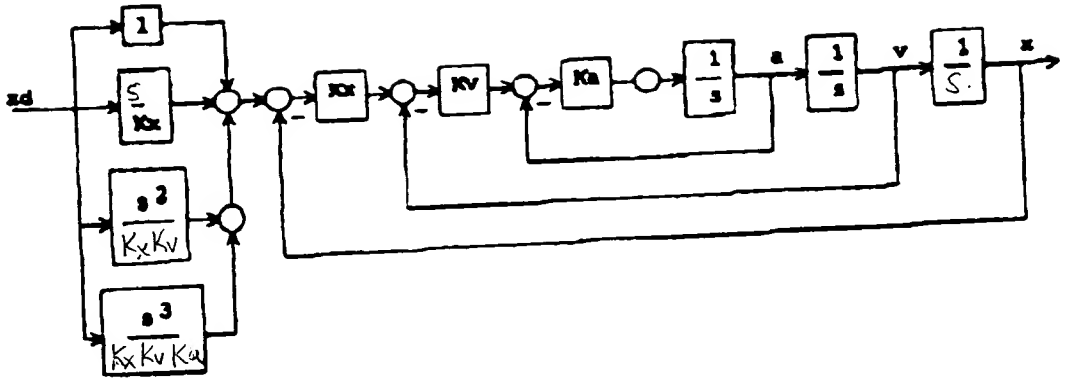
xd
1
s/Kx
s²/KxKv
s³/KxKvKa
Kx
Kv
Ka
1/s
a
1/s
v
1/s
x

FIG. 29

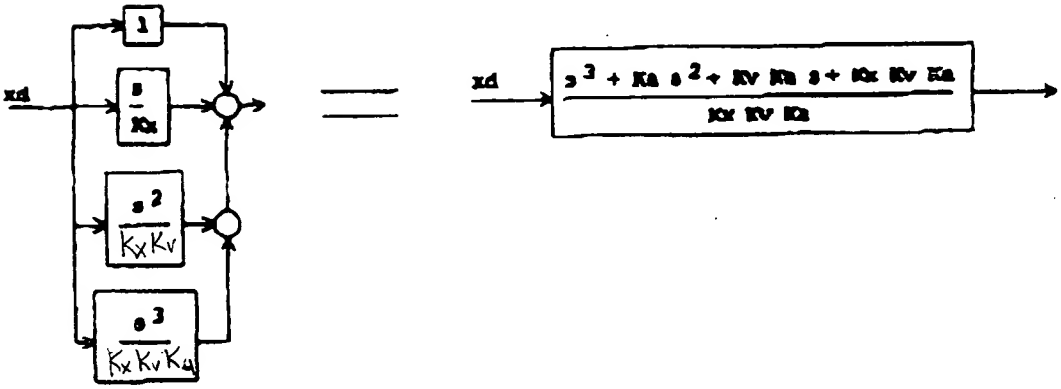
xd
1
s/Kx
s²/KxKv
s³/KxKvKa
xd
s³ + Ka s² + Kv Ka s + Kx Kv Ka
Kx Kv Ka

FIG. 30

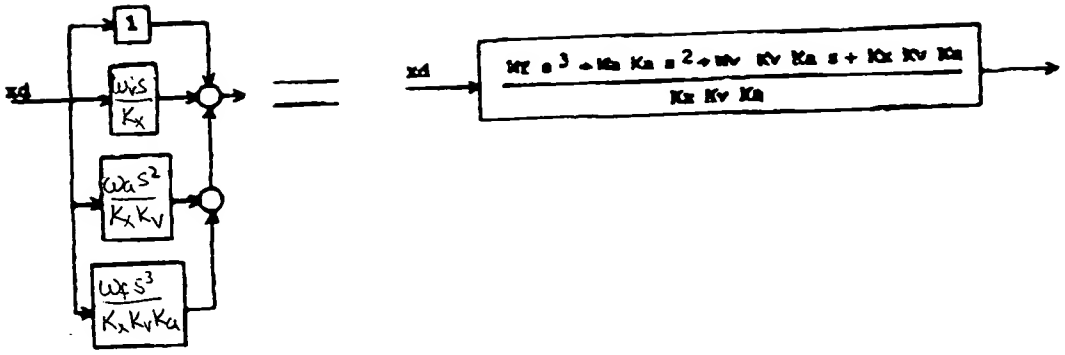

FIG. 31

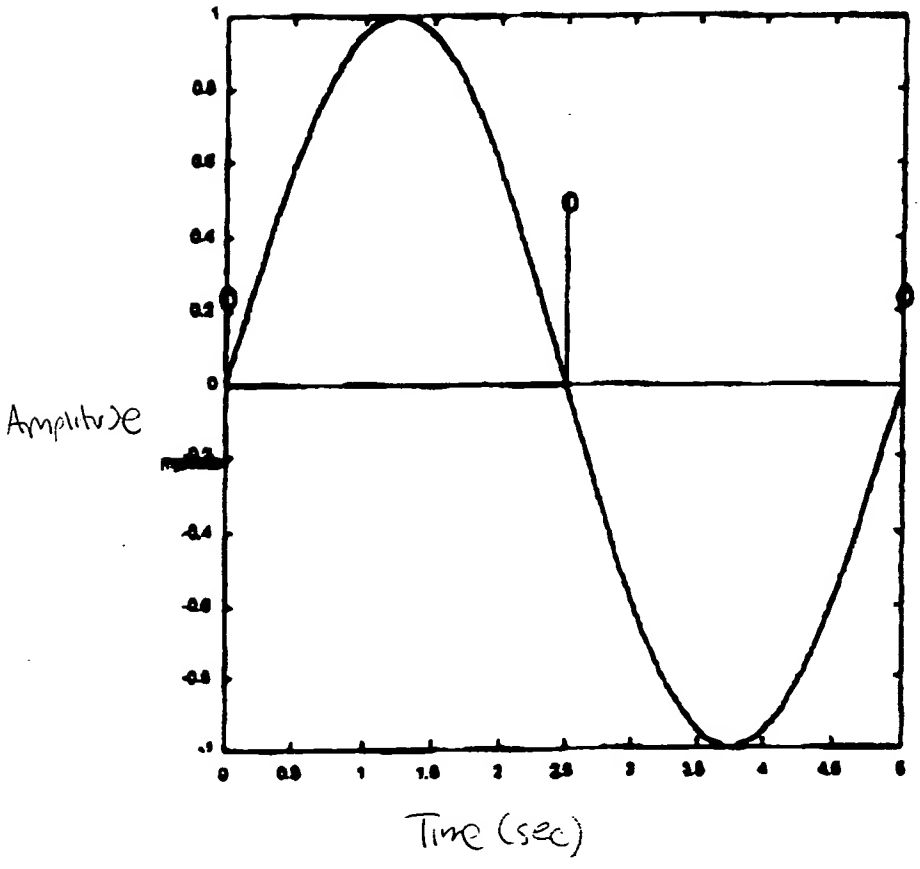

FIG. 32

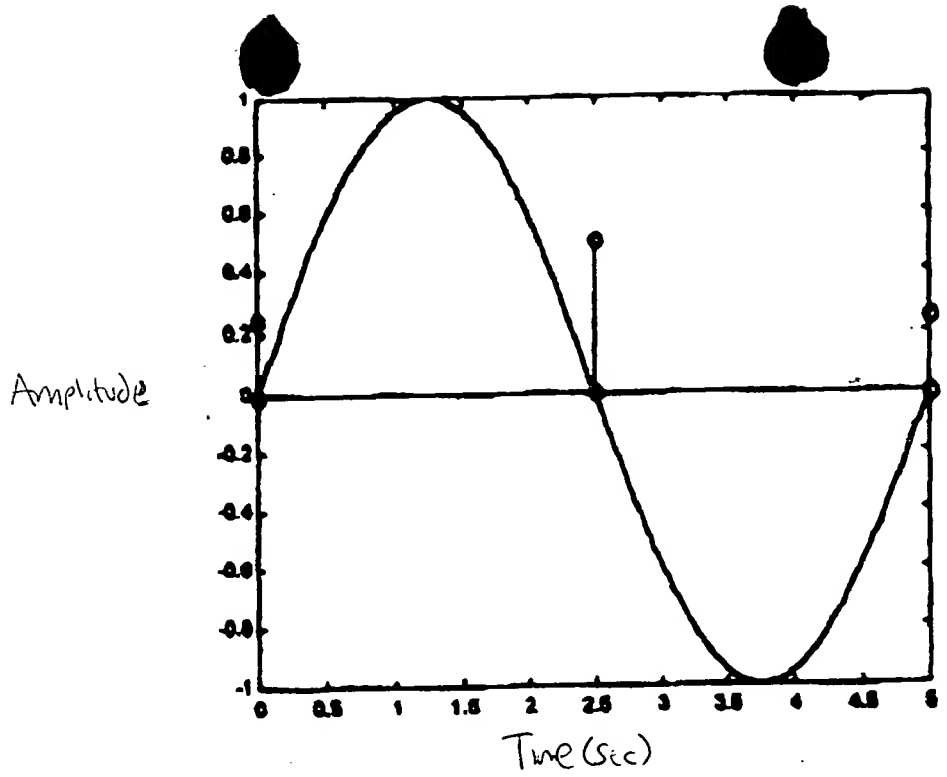

FIG. 33

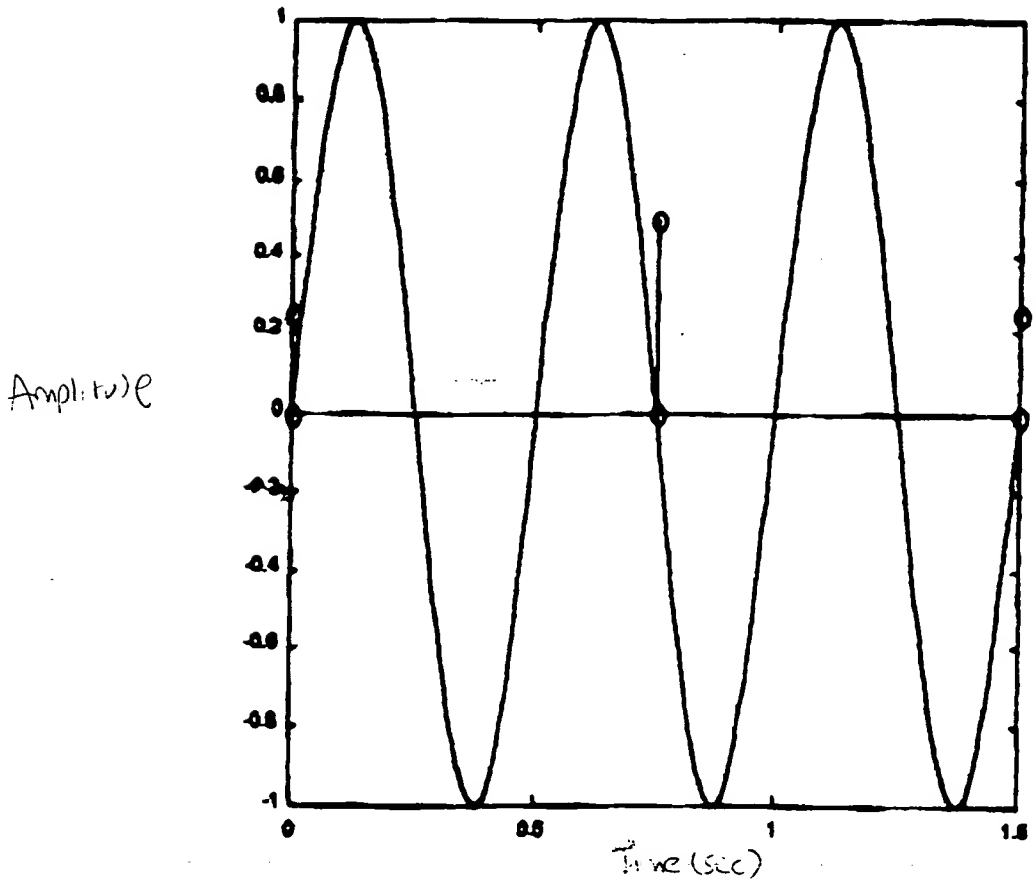

FIG. 34

Sep 06 2006 - 09:09:46

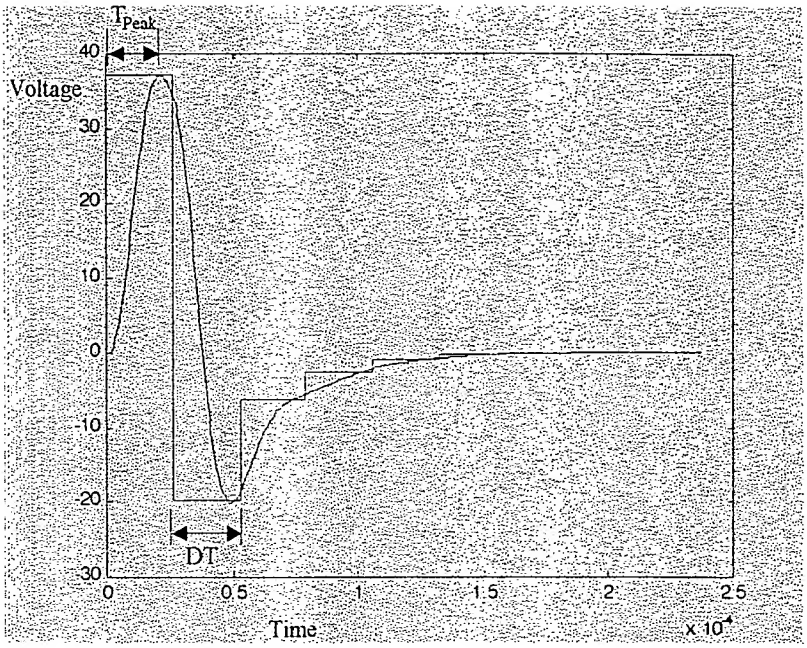

FIG. 35